Appendix D
Preliminary Alternatives Evaluation Process

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Alternatives screening is an approach commonly used as part of the National Environmental Policy Act (NEPA) scoping and environmental evaluation process to identify feasible alternatives and to ensure that a reasonable range of alternatives is considered for detailed evaluation in the Draft Environmental Impact Statement (EIS). It also is used to ensure that infeasible alternatives are identified at an early phase of the evaluation, so that the process can be focused on other, more critical issues and alternatives. Screening criteria are developed as a basis for considering the feasibility of alternatives and for determining whether alternatives meet the Purpose and Need of the Proposed Action.

The purpose of the Proposed Action is to regulate the discharge from vessels of dry bulk cargo residue in the Great Lakes that falls under the jurisdiction of the United States. The regulation must comply with the Coast Guard and Maritime Transportation Act of 2004, which provides that, in the absence of promulgating formal regulations governing the discharges from vessels of dry bulk cargo residues in the Great Lakes, the Coast Guard's current enforcement policy will expire on September 30, 2008. In developing criteria to meet the project Purpose and Need, the Coast Guard included optimizing the outcome for the following strategic goals: maritime safety, protection of natural resources, and maritime mobility.

Screening Criteria

To ensure that a consistent, reproducible approach was used in screening alternatives, screening criteria were applied to all of the alternatives identified in the Notice of Intent (NOI), plus all other alternatives that had been developed as part of the scoping and internal Coast Guard technical review process.

Alternatives that meet the Purpose and Need will:

- Prevent impacts which significantly degrade Great Lakes aquatic resources
- Regulate with only minimal additions to existing Coast Guard organizational structure and resources
- Avoid regulating dry bulk carriers and related shoreside facilities in a way that threatens their continued economic viability
- Avoid regulating dry bulk carriers in a way that threatens their safe operation
- Minimize unnecessary energy use
- Provide for an adequate and appropriate record keeping and compliance monitoring system
- Use proven dry cargo residue (DCR) control measures

Alternatives Considered for Screening

The following nine alternatives were identified from those listed in the NOI, suggested during the public scoping process, or during further Coast Guard consideration as potential alternatives that should be assessed relative to the agreed-upon screening criteria:

- Alternative 1, the "No Action" alternative, would allow the IEP to terminate on September 30, 2008, without additional extensions. Upon termination of the IEP, existing laws and regulations effectively banning the discharge of DCR into the Great Lakes would be enforced. Although the No Action alternative does not meet all of the screening criteria, as described below, NEPA requires that it be examined for comparison to the other alternatives.

- Alternative 2, the Proposed Action, would adopt the IEP as the basis for Coast Guard regulation with new requirements for standardized record keeping.

- Alternative 3 would adopt the IEP as the basis for Coast Guard regulation, without significant change. This alternative might include minor modifications to exclusion areas where DCR discharge is prohibited, based upon scientific findings of studies conducted in conjunction with this environmental analysis.

- Alternative 4 would adopt the IEP and would require implementation of above- and below-deck ship DCR control measures that are structural and operational. Alternative 4 could involve a variety of measures, including structural modifications to conveyor systems and modified operational practices. This alternative consists of subalternatives that differ by whether control measures are implemented at shore or while a ship was in transit:

  - 4A: IEP with Limited Discharge of all or Selected Cargos by Ship Controls Implemented at Shore

  - 4B: IEP with Limited Discharge of all or Selected Cargos by Ship Controls Implemented in Transit

  A complete list of control measures that were considered in developing this alternative is provided in Appendix D, DCR Control Measure Evaluation, Methodology, and Criteria. This alternative is a variation of the alternative identified in the NOI as "Adopt the IEP as the basis for permanent regulations, possibly with significant changes."

- Alternative 5 would implement the Proposed Action with modified exclusion areas. Exclusion areas could be modified to limit discharge of DCR in previously unidentified sensitive areas, to permit discharges in areas that are less sensitive than previously considered, or to limit discharge of certain types of cargoes.

- Alternative 6 would implement the Proposed Action and regulate shoreside facilities to control or eliminate dry cargo spillage onto the vessel during vessel loading or unloading.

- Alternative 7 would develop and implement a Coast Guard permit system for vessels discharging DCR. The permit system also would impose record keeping and reporting requirements that would enable the Coast Guard to review program impacts and

effectiveness. This system would limit the discharge volume and location of all or selected types of residue.

- Alternative 8 would involve modifications to the decks of vessels to prevent the residue from going overboard, including diversion of the washwater used in DCR sweeping to prevent its overboard discharge.

Alternatives Selection

After identifying alternatives, each alternative was evaluated relative to the screening criteria. Alternatives meeting all of the criteria were retained for further evaluation in the Draft EIS. Alternatives not meeting one or more criteria were excluded from further consideration. If an alternative met some of the criteria but preliminary data were insufficient to determine whether an alternative met all of the criteria, the alternative was retained for further evaluation to ensure that potentially feasible alternatives were not eliminated for lack of data.

Three of the alternatives did not meet one or more of the screening criteria. The reasons for considering those alternatives infeasible are described in more detail below. Four of the alternatives were found to be feasible and are evaluated in detail in the Draft EIS. The No Action alternative was carried forward in the Draft EIS, as required by NEPA. Table 1 summarizes the results of the screening process.

Alternatives Inconsistent with Screening Criteria

Alternative 3—Adopt the IEP without Significant Change. Alternative 3, adopting the IEP as the basis for Coast Guard regulation without significant change, is inconsistent with the screening criteria, as it does not provide for adequate and appropriate record keeping and compliance.

The intent of record keeping is to document where, when, and how much DCR is discharged. This information provides the basis for determining compliance with a regulation or program, and Coast Guard experience in regulating and managing discharges to water bodies under their jurisdiction has demonstrated the importance and advantages of record keeping. Since Alternative 3 does not satisfy these needs, it is excluded from further consideration.

Alternative 7—Develop Coast Guard System of Permits. Under this alternative, the Coast Guard would establish a permit system, patterned on the National Pollutant Discharge Elimination System (NPDES) under the Federal Water Pollution Control Act (FWPCA), as amended (Clean Water Act). In this type of system, dry-bulk carrier operators needing to discharge DCR would seek a permit from the Coast Guard prior to making any discharge of specified materials. DCR discharges would be permitted with respect to the type of commodity, location of discharge, and amount of discharge (by weight per event or by weight per shipping season). Permit holders could be required to employ DCR control measures to minimize amounts of material discharged and to meet permit conditions.

TABLE 1
Results of Preliminary Alternatives Evaluation

	Alternative[a]								
Screening Criteria[b]	**1**	**2**	***3***	**4A**	**4B**	**5**	**6**	***7***	***8***
Prevent significant aquatic impacts	NA	Not Known. To be evaluated	***Not known; to be evaluated***	Y	Y	Not known; to be evaluated	Not known; to be evaluated	***Y***	***Y***
Regulate with minimal additions to CG structure and resources	NA	Y	***Y***	Y	Y	Y	Y	***N***	***Y***
Regulate w/o threatening economic viability	NA	Y	***Y***	Not known; to be evaluated	Not known; to be evaluated	Not known; to be evaluated	Not known; to be evaluated	***Y***	***Not known; to be evaluated***
Regulate w/o threatening safety	NA	Y	***Y***	Y	Not known; to be evaluated	Y	Y	***Y***	***N***
Minimize unnecessary energy use	NA	Y	***Y***	Y	Y	Not known; to be evaluated	Y	***Y***	***Y***
Provide for adequate and appropriate record-keeping and compliance	NA	Y	***N***	Y	Y	Y	Y	***Y***	***Y***
Use proven DCR control measures	NA	NA	***NA***	Y	Not known; to be evaluated	NA	Not known; to be evaluated	***Not known; to be evaluated***	***N***

Note: NA, not applicable. "Not known; to be evaluated" is not the basis for elimination of an alternative. ***Bold italic alternatives have been removed from further consideration as a result of the screening process.***

[a] Alternatives: 1, No Action; 2, IEP with Record Keeping (Proposed Action); 3, IEP without Significant Change; 4A, IEP with Limited Discharge of All or Selected Cargos by Ship Controls Implemented at Shore; 4B, IEP with Limited Discharge of All or Selected Cargos by Ship Controls Implemented in Transit; 5, Proposed Action with Modified Exclusion Areas; 6, Proposed Action with Shoreside Controls; 7, Develop Coast Guard System for Permits; 8, Modify Deck and Tunnel Areas to Divert Sweeping Water and Prevent Overboard Discharge.

[b] Complete screening criteria: Prevent impacts which significantly degrade Great Lakes aquatic resources. Regulate with only minimal additions to existing Coast Guard organizational structure and resources. Avoid regulating dry bulk carriers in a way that threatens their continued economic viability. Avoid regulating dry bulk carriers in a way that threatens their safe operation. Minimize unnecessary energy use. Provide for an adequate and appropriate record keeping and compliance monitoring system. Use proven DCR control methods.

Under the permit system, these control measures could extend to allowable types of cargo-loading or -unloading equipment, personnel training with a view toward reducing cargo losses, and similar measures. The permit system also would impose record keeping and reporting requirements that would enable the Coast Guard to review program impacts and effectiveness.

This alternative did not meet the screening criteria, and thus did not meet the Purpose and Need. This alternative would result in a major new permitting program and require a significant increase in Coast Guard staff resources. Additional staff would be needed to administer the permit program, review permit applications, issue permits, and monitor for compliance. Even if a permit program were modeled on "NPDES general permits" with lower levels of administration for a class of dischargers, the program still would be expected to require more than minimal additions to the existing Coast Guard structure and resources.

Alternative 8—Modify Deck and Tunnel Areas to Divert Sweeping Water and Prevent Overboard Discharge. Under this alternative, structural modifications would be required to the decks and tunnel areas of vessels to collect the washwater used for sweeping DCR and prevent its discharge overboard. Treatment of washwater to remove solids involves active treatment, and it was evaluated as a potential DCR control measure in the IEP with Limited Discharge Alternative. It is not included in this alternative. One option that was considered as part of Alternative 8 is to add troughs or coamings to the edge of a vessel's decks and to divert and store washwater containing DCR into the troughs. Water collected in the troughs would be carried during transit and discharged for treatment at shoreside locations.

Collected washwater could be stored below deck in ballast tanks or by pumping tunnel washwater to above-deck storage tanks. However, deck sweeping, on average, lasts for approximately 3.5 hours (U.S. Coast Guard, 2005) and can use as much as 9,500 gallons to 106,000 gallons of water per washing (Melville, 1993). Retaining these large quantities of water on a vessel's deck would compromise its stability and threaten the safety of crews. Therefore, this option would not meet the need for safe operation of vessels.

In addition, adding water storage troughs to the deck of a vessel is not a proven management practice and does not have predictable results during the range of conditions found on the Great Lakes. Consequently, this approach does not meet the requirement of using proven DCR control measures.

Another option that was considered is modification of the cargo hold opening to allow sweeping of DCR directly into the hold. This modification would require removing the coaming, or raised frame around the hatchway in the deck of a ship. The coaming is a safety feature preventing the ship's crew from stepping into a hold, and its removal would significantly compromise the safety of the crew. Removal of the coaming to accept DCR sweeping could compromise the ability of the holds to keep out lake water and maintain the stability of the vessel. In addition, this alternative is expected to have high costs associated with modifying existing vessels and placing extra features on new ones. This alternative does not meet criteria related to safe operation of vessels and use of proven DCR control measures.

Alternatives to Be Evaluated in Detail

This section summarizes the alternatives that will be developed and described in more detail in Chapter 2 of the EIS. These alternatives are fully consistent with the screening criteria or are carried forward for further evaluation because their consistency cannot be determined at the present time.

Alternative 1—No Action. Under the No Action alternative, the Coast Guard would not promulgate new regulations, and the IEP would remain in effect until its 2008 expiration. After that date, existing laws and regulations effectively banning all DCR discharges would be enforced. The dry cargo residues that are discharged to the Great Lakes would need to be eliminated through source control or discharge to shoreside facilities while in port. The DCR would be washed from the ship's tunnel, swept from its deck, and collected. The collected DCR would be transported by pump station to shoreside facilities, where it would be pretreated to remove solids; pretreated washwater would then be discharged to the municipal sewer. This alternative is carried forward as a basis for comparison and by regulation under the NEPA for comparison to other alternatives. The No Action alternative is evaluated in detail in this EIS.

Alternative 2—Proposed Action. The Proposed Action would adopt the IEP as the basis for Coast Guard regulation and continuation of the discharge of DCR. New requirements would be added for standardized record keeping by vessels that discharge DCR. Whether this alternative prevents significant aquatic impacts will be assessed during more detailed evaluations based on scientific studies and supplemental field data.

Alternatives 4A and 4B—IEP with Limited Discharge of All or Selected Cargos. This alternative would adopt the IEP and record keeping as Coast Guard regulation, and require selected structural and operational control measures to reduce ship DCR discharges. Under Alternative 4A, the DCR control measures would be implemented while the ship is docked shoreside. Alternative 4B also would adopt the IEP and would require implementation of control measures while the ship is in transit.

Alternative 4A meets a majority of the criteria (six criteria). Because DCR control measures would be implemented shoreside and could delay the departure of ships from port if control measures were required to be conducted at port for safety reasons, additional evaluation will be needed to confirm that it could occur without threatening the economic viability of the shipping industry.

Alternative 4B meets four of the screening criteria. Although control measures such as mechanical sweeping and vacuuming are standard and proven practices on land for stormwater management purposes, they do not have a demonstrated track record onboard a vessel. Therefore, additional evaluation will be needed to confirm that selected control measures operate properly onboard, that they do not pose unexpected safety hazards to crew members, and that the cost of sweepers and vacuums and their use does not threaten the economic viability of the shipping industry.

Alternative 5—Proposed Action with Modified Exclusion Areas. This alternative would adopt the IEP and record keeping as Coast Guard regulation, with modifications to existing exclusion areas and exemptions from them. This alternative would refine rather than restructure the exclusion area concept or totally revise areas where DCR discharge is

permitted. Implementing the IEP with modified exclusion areas meets three of the screening criteria. Whether this alternative prevents significant aquatic impacts will be assessed during more detailed evaluations based on scientific studies and supplemental field data. If exclusion areas are modified to require longer travel times and distances between ports, such changes have the potential to affect the economic viability of the shipping industry and to require greater energy use. Changes in travel times and distances will be evaluated in more detail.

Alternative 6—Proposed Action with Shoreside DCR Control Measures. This alternative would adopt the IEP as Coast Guard regulation, require record keeping, and implement shoreside DCR control measures, such as curtains along conveyor belts, to limit the amount of DCR spilled on the ship deck from loading operations. This alternative meets four of the screening criteria. Whether this alternative prevents significant aquatic impacts will be assessed during more detailed evaluations based on scientific studies and supplemental field data. Similarly, the cost of shoreside improvements will be estimated to confirm that the improvements do not threaten the economic viability of the shipping industry. Finally, shoreside DCR control measures will be evaluated to determine whether they meet the standard of a proven technology.

References

U.S. Coast Guard. 2005. "Environmental Assessment of Incidental Dry Cargo Residue Discharges in the Great Lakes." Preliminary draft. Prepared for the U.S. Coast Guard, Office of Standards Evaluation and Development. Washington, D.C. October.

Melville (Melville Shipping). 1993. "Review and Investigation of Procedures Governing the Discharge of Non-Regulated Cargo Residues from Ships into the Great Lakes." *SSC File No. 014SS.T8080-2-6861/B*. Ottawa, Ontario, Canada.